

Appln No. 09/931,390
Amdt. dated July 12, 2005
Reply to Office Action of February 10, 2005

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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A client software program product comprising:
a computer-readable storage medium having code embodied therein for providing instructions to one or more processors to execute processes on an embedded device which is configured for establishing a network connection with at least one other computing device, the code comprising:

~~(a) code for an operating system layer including a first operating system and an operating system abstraction layer, wherein the operating system abstraction layer is configured to interface between platform independent code and first platform dependent code used by the first operating system;~~

~~(b) code for a programming environment and~~

~~(c) code configured to for an implement an application framework comprising a package manager, wherein the package manager is configured to request platform independent application code from a client server, wherein the application framework is configured to receive the platform independent application code and configured to request execution of platform independent instructions of the platform independent application code, and wherein the application framework includes platform independent applications;~~

~~code configured to implement a programming environment, wherein the programming environment is configured to receive the request for execution of the platform independent instructions and configured to convert the request to a request for execution of standardized operating system instructions; and~~

~~code configured to implement an operating system comprising an operating system abstraction layer and a first platform-specific operating system, wherein the operating system abstraction layer is configured to receive the requests for the execution of standardized operating system instructions and configured to convert the requests to requests for execution of platform-specific instructions of the first platform-specific operating system;~~

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wherein the client server receives application code and modifies the application code to form platform independent application code.

2. (Currently Amended) The client software program product of claim 1, wherein the operating system further comprises a second platform-specific operating system, and wherein the operating system abstraction layer is further configured to provide second platform dependent code to a second operating system convert the requests to requests for execution of platform-specific instructions of a second platform-specific operating system.

3. (Currently Amended) The client software program product of claim 2, wherein the operating system abstraction layer is further configured to provide the platform-specific instructions of first platform dependent code to the first platform-specific operating system which is installed on the embedding computing device, and to provide the platform specific instructions of the second platform dependent code to the second platform-specific operating system when the second platform-specific operating system is installed on the embedded computing device.

4. (Currently Amended) The client software program product of claim 3, wherein the embedded computing device comprises a first processor, wherein the first platform-specific operating system is configured to provide the platform specific instructions of the first platform-specific operating system to the first processor, and wherein the embedded computing device is configured for exchanging the first processor with a second processor, wherein the second platform-specific operating system is configured to provide the platform-specific instructions of the second platform-specific operating system to the second processor.

5. (Currently Amended) The client software program product of claim 1, wherein the operating system layer further comprises a second operating system, wherein the operating system abstraction layer is configured to interface between platform independent code and second platform dependent code used by the second operating system wherein the code

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configured to implement the programming environment comprises a virtual machine and a plurality of libraries .

6. (Currently Amended) A client software program product comprising:
a computer-readable storage medium having code embodied therein for providing instructions to one or more processors for executing processes on an embedded computing device configured for establishing a network connection with at least one other computing device, the code comprising:

- ~~(a) code for an operating system layer including a first operating system;~~
- ~~(b) code for a programming environment; and~~
- ~~(c) code for configured to implement an application framework ;~~
- ~~(d) wherein the client software program is configured to interface with a client support server including a type converter module for translating complex content to simplified content; and~~
- ~~(e) wherein the client software program is configured to receive the simplified content from the client support server for processing the simplified content. comprising code configured to request platform independent application data from a client support server, wherein the application framework is configured to receive the platform independent application data and configured to request execution of platform independent instructions of the platform independent application data;~~

code configured to implement a programming environment, wherein the programming environment is configured to receive the request for execution of the platform independent instructions and configured to convert the request to a request for execution of standardized operating system instructions, wherein the programming environment comprises a virtual machine; and

code configured to implement an operating system comprising an operating system abstraction layer and a first platform-specific operating system, wherein the operating system abstraction layer is configured to receive the requests for the execution of standardized

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operating system instructions and configured to convert the requests to requests for execution of platform-specific instructions of the first platform-specific operating system;

wherein the client server receives application data and modifies the application data to form the platform independent application data .

7. (Currently Amended) The client software program product of claim 6, wherein the client support server further includes a protocol converter module for mapping at least one complex protocol to a simplified protocol, ~~the client software program being configured to use the simplified protocol~~ wherein the platform independent application data comprises the simplified protocol .

8. (Currently Amended) The client software program product of claim 7, wherein the application framework includes a package manager, and wherein the client support server further includes a package repository, and wherein the package manager is configured to communicate with the package repository for ~~receiving package data for running a software package on the embedded computing device.~~ receiving the platform independent data .

9. (Previously presented) The client software program product of claim 8, wherein the package manager includes a package registry, and wherein the package manager is configured to compare the package registry with package data needed to run the software package and to communicate with the package repository for receiving the package data.

10. (Currently Amended) The client software program product of claim 6, wherein the application framework includes a package manager, and wherein the client support server further includes a package repository, and wherein the package manager is configured to communicate with the package repository for receiving package data for running a software package on the embedded computing device.

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11. (Previously presented) The client software program product of claim 10, wherein the package manager includes a package registry, and wherein the package manager is configured to compare the package registry with package data needed to run the software package and to communicate with the package repository for receiving the package data.

12. (Currently Amended) The client software program product of claim 6, wherein the ~~operating system layer further includes an operating system abstraction layer,~~ wherein the operating system abstraction layer is configured to interface between platform independent code and first platform dependent code used by the first operating system, the platform independent code arising from platform independent data received from the at least one other computing device when the embedded computing device has established the network connection thereto.

13. (Previously presented) The client software program product of claim 12, wherein the operating system abstraction layer is further configured to provide second platform dependent code to a second operating system.

14. (Currently amended) A client software program product for providing instructions to one or more processors to execute processes on an embedded computing device configured for establishing a network connection with at least one other computing device, comprising:

~~(a) an operating system layer including a first operating system;~~

~~(b) a programming environment; and~~

~~(c) code configured to for an implement an application framework comprising a package manager, wherein the package manager is configured to request platform independent application data from a client support server, wherein the application framework is configured to receive the platform independent application data and a simplified communication protocol from the client support server and configured to request execution of platform independent~~

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instructions of the platform independent application data, wherein the platform independent application data comprises a simplified communication protocol[[,]] :

~~(d) wherein the client software program is configured to interface with a client support server including a protocol converter module for mapping at least one complex protocol to a simplified protocol, and~~

~~(e) wherein the client software program is configured to receive and use the simplified protocol.~~

code configured to implement a programming environment, wherein the programming environment is configured to receive the request for execution of the platform independent instructions and configured to convert the request to a request for execution of standardized operating system instructions; and

code configured to implement an operating system comprising an operating system abstraction layer and a first platform-specific operating system, wherein the operating system abstraction layer is configured to receive the requests for the execution of standardized operating system instructions and configured to convert the requests to requests for execution of platform-specific instructions of the first platform-specific operating system;

wherein the client support server is configured to map a complex communication protocol into the simplified communication protocol.

15. (Previously presented) The client software program product of claim 14, wherein the application framework includes a package manager, and wherein the client support server further includes a package repository, and wherein the package manager is configured to communicate with the package repository for receiving package data for running a software package on the embedded computing device.

16. (Previously presented) The client software program product of claim 15, wherein the package manager includes a package registry, and wherein the package manager is configured to compare the package registry with package data needed to run the software package and to communicate with the package repository for receiving the package data.

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17. (Currently Amended) The client software program product of claim 14, wherein the ~~operating system layer further includes an operating system abstraction layer,~~ wherein the operating system abstraction layer is configured to interface between platform independent code and first platform dependent code used by the first operating system, the platform independent code arising from platform independent data received from the at least one other computing device when the embedded computing device has established the network connection thereto.

18. (Previously presented) The client software program product of claim 17, wherein the operating system abstraction layer is further configured to provide second platform dependent code to a second operating system.

19. (Currently Amended) A client software program product for providing instructions to one or more processors to execute processes on an embedded computing device configured for establishing a network connection with at least one other computing device, comprising:

- (a) an operating system layer including a first operating system;
 - (b) a programming environment configured to receive platform-independent instructions, and configured to call instructions of the first operating in response thereto; and
 - (c) an application framework including a package manager configured to request execution of the platform-independent instructions, and
 - (d) wherein the client software program is configured to interface with a client support server including a package repository, and
 - (e) wherein the package manager is configured to communicate with the package repository for receiving package data for running a software package on the embedded computing device, wherein the software package includes the platform-independent instructions and a simplified protocol,
- wherein the client support server converts a complex protocol into the simplified protocol.

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20. (Previously presented) The client software program product of claim 19, wherein the package manager includes a package registry, and wherein the package manager is configured to compare the package registry with package data needed to run the software package and to communicate with the package repository for receiving the software package and the package data.

21. (Previously presented) The client software program product of claim 19, wherein the operating system layer further includes an operating system abstraction layer, wherein the operating system abstraction layer is configured to interface between platform independent code and first platform dependent code used by the first operating system, the platform independent code arising from platform independent data received from the at least one other computing device when the embedded computing device has established the network connection thereto.

22. (Previously presented) The client software program product of claim 21, wherein the operating system abstraction layer is further configured to provide second platform dependent code to a second operating system.

23. (Original) A method of transferring simplified data to a client running on an embedded device from complex data residing on a content server, using a converter service running on a client support server, comprising the steps of:

(a) communicating a transfer request of the complex data from the content server to the client running on the embedded device;

(b) communicating a conversion request to the client support server to convert the complex data to the simplified data;

(c) retrieving the complex data;

(d) converting the complex data to the simplified data; and

(e) transferring the simplified data to the client.

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24. (Original) The method of claim 23, wherein the complex data includes complex content and the simplified data includes simplified content translated from the complex content at the converting step.

25. (Original) The method of claim 23, wherein the complex data includes a complex protocol and the simplified data includes a simplified protocol mapped from the complex protocol at the converting step.

26. (Original) The method of claim 23, further comprising the steps of: processing the simplified data in a programming environment using platform independent code; converting the platform independent code using an operating system abstraction interface; and processing the data using an operating system running platform dependent code.

27. (Original) A method of transferring simplified data to a client running on an embedded device from complex data residing on a server, using a converter service software module, comprising the steps of:

- (a) communicating a transfer request of the complex data from the server to the client running on the embedded device;
- (b) communicating a conversion request for the converter service software module to convert the complex data to the simplified data;
- (c) retrieving the complex data;
- (d) converting the complex data to the simplified data; and
- (e) transferring the simplified data to the client.

28. (Original) The method of claim 27, wherein the complex data includes complex content and the simplified data includes simplified content translated from the complex content at the converting step.

29. (Original) The method of claim 27, wherein the complex data includes a complex protocol and the simplified data includes a simplified protocol mapped from the complex protocol at the converting step.

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30. (Original) The method of claim 27, further comprising the steps of:
processing the simplified data in a programming environment using platform
independent code;

converting the platform independent code using an operating system abstraction
interface; and

processing the data using an operating system running platform dependent code.

31. (Original) A method of transferring package data needed to run a
software package residing on a content server to a client running on an embedded device, using a
package repository running on a client support server, comprising the steps of:

(a) communicating a transfer request of the software package from the content
server to the client running on the embedded device;

(b) communicating a conversion request to the package repository for package
data needed to run the software package on the embedded device;

(c) transferring the package data from the package repository to the client; and

(d) transferring the software package from the content server to the client.

32. (Original) The method of claim 31, further comprising the steps of:
communicating a feature request to the package repository for package metadata
needed to run the software package on the embedded device; and

transferring the package metadata from the package repository to the client.

33. (Original) The method of claim 31, further comprising the steps of:
processing data using the software package in a programming environment using
platform independent code;

converting the platform independent code using an operating system abstraction
interface; and

processing the data using an operating system running platform dependent code.

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34. (Previously presented) A method of transferring package data needed to run a software package to a client running on an embedded device, using a package repository software module, comprising the steps of:

(a) communicating a transfer request of the software package from the server to the client running on the embedded device;

(b) communicating a conversion request to the package repository software module for package data needed to run the software package on the embedded device;

(c) transferring the package data to the client via the package repository software module; and

(d) transferring the software package from the server to the client.

35. (Original) The method of claim 34, further comprising the steps of: communicating a feature request to the package repository software module for package metadata needed to run the software package on the embedded device; and

transferring the package metadata to the client via the package repository software module.

36. (Original) The method of claim 34, further comprising the steps of: processing data using the software package in a programming environment using platform independent code;

converting the platform independent code using an operating system abstraction interface; and

processing the data using an operating system running platform dependent code.

37. (Original) A method of processing data on an embedded device having an operating system running platform dependent code thereon, the embedded device being configured for establishing a network connection with at least one other computing device, comprising steps of:

(a) receiving platform independent data from the at least one other computing device for processing in a programming environment using platform independent code;

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(b) converting the platform independent code using an operating system abstraction interface; and
(c) processing the data using the operating system.

38. (Previously presented) A server software program product running on a server computer for providing instructions to one or more processors to execute processes in support of an embedded computing device having a client software program running thereon and being configured for establishing a network connection with the server, comprising:

(a) at least one data conversion module for converting complex data to simplified data for sending simplified data to the embedded computing device for processing thereon; and

(b) a package repository module configured to communicate with the package manager for sending package data to the embedded computing device for running a software package on the embedded computing device.

39. (Previously presented) The server software program product of claim 38, wherein the package repository module is further configured to communicate with the package manager for sending package metadata to the embedded computing device for running the software data.

40. (Previously presented) The server software program product of claim 38, wherein the complex data includes complex content and the simplified data includes simplified content translated from the complex content by the at least one data conversion module.

41. (Previously presented) The server software program product of claim 38, wherein the complex data includes a complex protocol and the simplified data includes a simplified protocol mapped from the complex protocol by the at least one data conversion module.

42-45. Canceled.